

CLAIMS

1. Equipment (1; 100) for printing on non-woven-fabric, comprising a support (2; 102) driven such as to transport a sheet (T) of non-woven-fabric, at least one driven printing body (3; 103) in order to carry out the printing and a control and command unit (6) operatively connected with each of said support and at least one printing body such as to detect electrical signals originating from said support and at least one printing body, turn said signals into numerical values representative of the status of their angular speed and torque moment, compare said numerical values with ratios of preset numerical values of said angular speed and said torque moments and send signals to said support and at least one printing body in order to correct any possible variations in said values which fall outwith said ratios.
2. The equipment (1; 100) according to claim 1, wherein said support (2; 121) is driven by means of a motor (2M) and wherein said at least one printing body (3; 103) is driven by a motor (3M).
3. The equipment (1; 100) according to claims 1 or 2, wherein said driven support (2; 102) is provided with through holes (21; 121) which cooperate with holding means (4) in order to hold the sheet of non-woven-fabric (T) onto said support.

4. The equipment (1) according to any of the claims 1 to 3, wherein said support (2) is a cylindrical support represented by a press roller.
5. The equipment (100) according to any of the claims 1 to 3, wherein said support (102) is a press belt.
6. The equipment (100) according to claim 5, wherein said press belt (102) is a perforated belt closed on itself.
7. The equipment (1; 100) according to any of the claims 1 to 6, wherein said at least one printing body (3; 103) 10 comprises from two to twelve rotating engraved rollers operated individually and independently by motors (3M).
8. The equipment (1; 100) according to any of the claims 3 to 7, wherein said holding means (4) comprise suction fans having the function of sucking air from the outside 15 of the support (2; 102) towards its inside through said through holes (21; 121).
9. The equipment (1; 100) according to claim 8, wherein said suction fans (4) are represented by fans.
10. The equipment (1; 100) according to claim 8, wherein 20 said suction fans (4) are represented by pumps of the compressor or vacuum pump type.
11. The equipment (1; 100) according to any of the claims 8 to 10, wherein said suction fans are connected to a water separator (5).
- 25 12. The equipment (1; 100) according to claim 11, wherein

said separator (5) is a condenser.

13. The equipment (1; 100) according to claim 11, wherein said separator (5) separates the water from the air by mechanical and physical action.

5 14. The equipment (1; 100) according to claim 13, wherein said separator is a coclea-shaped distillator.

15. The equipment (1; 100) according to any of the claims 1 to 14, further comprising guide means (A, B, C, D, E, F) suitable to guide and support the inlet and outlet 10 sheet (T) of non-woven-fabric from said equipment.

16. The equipment (1; 100) according to claim 15, wherein said guide means (A, B, C, D, E, F) are rollers individually and independently motor-driven by corresponding motors (AM, BM, CM, DM, EM, FM).

15 17. The equipment (1; 100) according to claims 15 or 16, wherein at least one pair (B, C) of said guide means are positioned at the ingoing non-woven-fabric into the printing stations and consist of widening means which allow increasing the height of the non-woven-fabric.

20 18. The equipment (1; 100) according to any of the claims 1 to 17, further comprising an image acquiring device (7).

19. The equipment (1; 100) according to claim 16, wherein said device (7) is a camera or a video camera.

25 20. The equipment (1; 100) according to any of the claims

18 to 19, wherein said device (7) is a digital device.

21. A process for the printing of non-woven-fabric comprising the steps of:

- providing a non-woven-fabric sheet;
- 5 - providing an equipment for printing on non-woven-fabric comprising a driven support for the transportation of said non-woven-fabric and at least one driven printing body;
- feeding said equipment with said non-woven-fabric sheet;
- 10 - performing the printing on said non-woven-fabric under the control and command of a control and command unit ,

wherein said control and command unit is operatively connected with said support and at least one printing body such as to detect electrical signals originating from said support and at least one printing body, turning said signals into numerical values representative of the status of their angular speed and torque moment, comparing said numerical values with ratios of presetnumerical values of said angular speeds and said torque moments and sending signals to said support and at least one printing body in order to correct any possible variations of said values which fall outwith said ratios.

25 22. The process according to claim 21, wherein said

control and command unit acts separately and independently on each motor which operates the corresponding rotating body of the equipment such as to make reference to the same electrical axis.

5 **23.** The process according to claims 21 or 22, wherein the control by the control and command unit is implemented thanks to additional closed loop automatic control comprising the assistance of an image acquiring device.

10 **24.** The process according to any of the claims 21 to 23, further comprising an operation stage of holding means in order to hold the non-woven-fabric sheet onto the outer surface of the support.

15 **25.** The process according to claim 24, wherein said operation stage of the holding means is achieved by suction fans which, by sucking air from the outside towards the inside of the support through through holes, hold the non-woven-fabric onto said support.

20 **26.** The process according to any of the claims 24 to 25, also comprising a control stage of the operation of the holding means by said control and command unit.

27. The process according to any of the claims 25 to 26, comprising a separation stage of the water from the air sucked in by the suction fans.

28. The process according to any of the claims 21 to 27, 25 wherein the printing stage occurs by means of

flexographic (ink) or serigraphic (coloured paste) methods.

29. The process according to claim 28, comprising a dye control stage by the control and command unit through the
5 optimisation of the characteristics of each dye, such as flow, pressure and viscosity, depending on the type of non-woven-fabric to be printed.

30. The process according to any of the claims 21 to 29, comprising a widening stage in order to ensure the
10 maintenance of the product height.

31. The process according to any of the claims 21 to 30, wherein printing takes place at a speed of up to 400 m/min on a sheet of wet or dry non-woven-fabric.

32. Non-woven-fabric obtainable by means of the process
15 according to any of the claims 21 to 31.

33. The non-woven-fabric according to claim 32 characterised by having multicolour text and/or drawings.

34. Equipment (1; 100) for printing on non-woven-fabric, comprising a driven support (2; 102) provided with
20 through holes (21; 121) so as to transport a sheet (T) of non-woven-fabric, at least one driven printing body (3;
103) for implementing the printing and driven holding means (4) which interact with said support in order to hold said sheet (T) onto said support (2; 102).